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Reply Brief
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H. P. L.

Patent
Attorney Docket No.: BMCA9159.009

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Ng, Paul Tat-Keung
Serial No. : 09/579,973
Filed : May 26, 2000
For : METHOD AND APPARATUS FOR
QUICK STARTING A ROPE-START
TWO-STROKE ENGINE
Group Art No. : 3747
Examiner : Dolinar, Andrew M.

CERTIFICATION UNDER 37 CFR 1.8(a) and 1.10

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REPLY BRIEF TO EXAMINER'S ANSWER MAILED 11-07-03

Dear Sir:

Responsive to the Examiner's Answer mailed November 7, 2003, please consider the following remarks.

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REMARKS

In the Examiner's Answer of November 7, 2003, the Examiner acknowledged that "Appellant's statement of the status amendments after final rejection contained in the brief is correct." Examiner's Answer pg. 2, ¶ 6. At the same time, the Examiner also stated that "[t]he amendment after final rejection filed on May 19, 2003, with the Appeal Brief has been entered." d. ¶ 7. Appellant appreciates the Examiner's entry of these amendments.

In the Summary of the Invention section of the Examiner's Answer, the Examiner stated that "[t]he summary of invention contained in the brief is deficient because it fails to refer to the drawing by reference characters as is required by 37 C.F.R. 1.92 (c)(5)." Examiner's Answer pg. 2, ¶ 9. Appellant notes that the Examiner mailed a Notice of Non-compliance with 37 C.F.R. 1.92 (c) on July 16, 2003, in which the Examiner did not make any statement regarding the Summary of the Invention section of the Appeal Brief or any deficiency thereof. Nevertheless, Appellant has included herein a substitute Summary of Invention including reference characters.

Regarding the grouping of the claims, the Examiner stated that "[t]he rejection of claims 1, 7-14, 21-24, and 26-36 stand or fall together because appellant's brief does not include and statement that the grouping of the claims does not stand or fall together and reasons in support thereof." However, while the Examiner is partially correct in that a typographical error was made in the Grouping of the Claims section whereby the word "not" was omitted from the statement that "[t]he pending rejected claims do *not* all stand or fall together," Appellant did indeed provide reasons in support thereof. Appellant has provided herein a correct Grouping of the Claims section that properly states that "[t]he pending rejected claims do not all stand or fall together."

This inadvertent omission notwithstanding, Appellant believes upon review of the Argument section of the Appeal Brief filed August 20, 2003, it is readily apparent that Appellant specified arguments with respect to claims 1, 21, 22-24, 26, and 34. Accordingly, based on the independent arguments of claims 1, 21, 22-24, 26, and 34, it is apparent that Appellant does not believe these claims stand or fall together. Therefore, the Examiner's statement regarding the grouping of the claims is incorrect and claims 1, 21, 22-24, 26, and 34 must be considered independently.

Regarding the Response to Arguments section, Appellant believes the Examiner has presented numerous statements asserted as fact that are simply incorrect. That is, while Appellant contends that Tobinaga et al. is clear that reverse running is not allowed, the Examiner arbitrarily concluded that the phrase "reverse prevention control" holds no meaning. Furthermore, the Examiner drew numerous conclusions that are obviously contrary to the explicit teachings of

Tobinaga et al. Specifically, the Examiner stated that “[s]ince the pulses serve to fire the spark plugs it can be inferred that the first spark plug firing occurs within the first 60° of crankshaft rotation”. Examiner’s Answer pg. 4, ¶ 1. However, the Examiner’s conclusion is directly contrary to the teachings of Tobinaga et al. Tobinaga et al. teaches that a microcomputer is the ignition timing means and that spark timing signals, which cause the spark plug to fire, are generated in response “to a variety of input signals.” Col. 5, lns. 27-34. “These input signals are derived from five different detectors, namely pulser coils 32, throttle valve opening detector 34, temperature detector 35, overheat detector 36, and an abnormal combustion or knock detector 37.” Col. 5, lns. 34-38. While Tobinaga et al. teaches that the pulses generated by the pulser coils are one of a variety of input signals that may be used to generate an ignition timing signal, Tobinaga et al. does not teach that “the pulses serve to fire the spark plugs,” as the Examiner contends. Examiner’s Answer pg. 4, ¶ 1. Rather, Tobinaga et al. is clear that the pulses and/or other signals may be utilized to determine when to fire the spark plugs. One of ordinary skill in the art will readily recognize that the Examiner’s conclusion and the actual teachings of Tobinaga et al. are at stark odds.

Also, the Examiner contended that “[t]here is no disclosure that the position pulses are ever prevented from firing a spark plug.” Examiner’s Answer pg. 4, ¶ 1. The Examiner’s statement is illogical in light of the teachings of Tobinaga et al. That is, the Examiner’s statement is based on a belief that the pulses actually fire the spark plugs. The Examiner’s entire contention revolves around an “inference” that “the pulses serve to fire the spark plugs”, and therefore, “the first spark plug firing occurs within the first 60° of crankshaft rotation.” Examiner’s Answer pg. 4, ¶ 1. Therefore, if this inference is incorrect, the Examiner’s analysis fails. Initially, it is noted that the use of this inference at all is questionable from a procedural standpoint, but even accepting the propriety of the inference, if it can be shown that the inference is incorrect, the Examiner’s analysis, and therefore the rejection, must fall. As explained above, the inference is simply not correct. That is, while the pulses may be used as one of a variety of inputs that serve as a signal to a microprocessor which may be used to time a spark plug firing, the pulses clearly do not “serve to fire the spark plugs.” Col. 5, lns. 34-38. Accordingly, since the pulses do not actually fire the spark plugs, the Examiner has absolutely no basis to infer “that the first spark plug firing occurs within the first 60° of crankshaft rotation.” With that inference solidly dismissed, the Examiner’s reasoning and conclusion are without basis, and must be dismissed.

With respect to the Examiner’s statement that “there is no disclosure that position pulses are ever prevented from firing a spark plug without reverse rotation detection” is a clear sign from the Examiner that the Examiner does not solidly believe in his own rejection. That is, if the

Examiner must revert to seeking the positive recitation of a negative, that alone places the entire rejection down an unrecoverable slippery slope. Stating that there is no disclosure that the position pulses are ever prevented from firing a spark plug is merely an attempt to shift the Examiner's burden to Appellant. The Examiner should be asking whether there is any disclosure to support that the position pulses actually serve to fire the spark plugs. Since there is none, the Examiner attempts to divert attention from the real issue and shift the burden to Appellant. That is, the Examiner is asking the reference to state a negative. It is illogical to expect any reference to state what it does not do. The whole point of a patent reference is to explain what it does, not what it does not. In other words, the Examiner seeks a statement that states that the "position pulses prevent firing of a spark plug...without reverse rotation detection." Such an explicit statement is not needed, but it would also be illogical. Just because the position pulses do not "serve to fire the spark plugs," does not necessarily lead to them preventing the firing of the spark plugs. The truth of the matter is that, as Tobinaga et al. explicitly states, "the ignition timing means 30 has been programmed to be selectively responsive to a variety of input signals." Col. 5, lns. 32-34. Since "these input signals are derived from five different detectors" that include the pulser coils 32, it is explicitly stated that the Examiner's inference is incorrect. Col. 5, lns. 34-36. That is, the Examiner's statement that pulses serve to fire the spark plugs, which is then used to infer that the first spark plug firing occurs within the first 60° of crankshaft rotation, is not just an incorrect inference, it is explicitly incorrect.

The Examiner provided a citation of what he asserted is a description of "reverse prevention control." That is, the Examiner cited column 16, lines 27-40 of Tobinaga et al. as teaching reverse prevention control. However, Appellant notes that the Examiner failed to cite to lines 23-27 and lines 40-43 where Tobinaga et al. begins and ends the explanation of reverse prevention control. In the section uncited by the Examiner, Tobinaga et al. repeatedly refers to reverse prevention control and explains it is performed according to the program shown in Fig. 19. Nevertheless, the Examiner ignored the explicit teachings of Tobinaga et al. and instead stated that "it can be inferred that the spark plug firing occurs before reverse rotation is determined." Examiner's Answer pg. 4, ¶ 5. However, the Examiner has not given any support for the Examiner's "inferences." Furthermore, Appellant believes, as argued in the Appeal Brief, that Tobinaga et al. is clear that reverse running is prevented as taught in column 16, lines 23-43. Appellant finds it particularly troubling that the Examiner omitted two sections from citation that surround the very section which the Examiner chose to cite, but which are contrary to the Examiner's assertions.

The Examiner stated that “[t]he meaning of the terms cannot be interpreted in a vacuum but in the context of the entire disclosure of the reference” but the Examiner failed to do so himself. Examiner’s Answer pg. 4, ¶ 1. That is, Tobinaga et al. is explicit that reverse running is prevented and no other conclusion can be accurately drawn or even inferred. See Col. 16, lns. 23-43. Contrary thereto, the present claims are quite explicit in that the presently claimed invention actually allows starting in reverse. These claims not only clearly define over Tobinaga et al., they claim a system that Tobinaga et al. actually teaches directly away from. That is, Appellant contends that it is common practice in the art to prevent running in reverse, and that is why Tobinaga et al. uses the term reverse rotation detection, and actually is intended to prevent running in reverse, while the present claims specifically allow it, in order to get the engine started quicker. There is no such disclosure in Tobinaga et al., and none can be derived therefrom, or inferred therefrom.

The Examiner repeatedly asserted that “it is proper to take into account not only specific teachings of the reference but also inferences.” The Examiner has done so without support. Examiner’s Answer pg. 5, ¶ 1. That is, while the Examiner is correct that it is proper to establish obviousness based on the suggestions that one of ordinary skill in the art would reasonably draw from the art of record, the Examiner ignored the fact that to establish a *prima facie* case of obviousness, the Examiner must provide clear and convincing reasoning supporting such. However, contrary to the Appellant’s repeated requests, the Examiner failed to do so. It is entirely improper to ignore the clear meaning of the direct teachings of Tobinaga et al. in favor of unsupported “inferences.” The Examiner is merely using the present invention as a guide in making the inferences relied thereupon, which is a clear application of improper hindsight reconstruction.

The Examiner then addressed Appellant’s arguments regarding a reasonable expectation of success and stated that such is without merit because the Examiner believed that Appellant’s arguments are based on an incomplete analysis of reverse rotation prevention. Appellant believes the Examiner’s statement is not only improper given the accuracy of the Examiner’s previous remarks, but also an insufficient response to Appellant’s Arguments. Appellant contends that the arguments of the Appeal Brief filed August 20, 2003, regarding a reasonable expectation success, are indeed meritorious and serve to demonstrate that the Examiner has failed to establish a *prima facie* case of obviousness. Appellant stands by and requests consideration of those arguments previously presented.

Regarding claim 21, the Examiner dismissed Appellant’s arguments as unpersuasive because the Examiner believed “Appellant has made no allegation that this function implies the

presence of specific structure that is not taught or suggested by the prior art.” Examiner’s Answer, pg. 5, ¶ 3. Specifically, the Examiner referred to the elements of claim 21 that state that the acts claimed are carried out in a signal actuation of the manual starter and that other acts are carried out after the engine has been allowed to start. Appellant again disagrees with the Examiner’s statements in that Appellant believes that the claimed invention is clear and specifically drawn to structure that, by its very design, allows such acts to be carried out during a signal actuation of the manually powered starter and allows other acts to be carried out after the engine is allowed to start i.e., the index markers specifically taught in the claimed invention. As such, Appellant believes claim 21 is clearly distinguishable over the reference.

The Examiner then addressed Appellant’s arguments regarding claims 22-24 and 26. The Examiner stated that claims 2-4 and 6 differ from the scope of claims 22-24 and 26 in that claims 22-24 and 26 do not define a relationship between marker detection and absolute rotational position. However, Appellant believes the claims clearly do define such and the Examiner’s remarks regarding these claims are insufficient to conclude otherwise. As such, Appellant believes the remarks regarding claims 22-24 and 26 of the Appeal Brief filed August 20, 2003, are accurate.

Regarding claim 34 the Examiner stated that a conclusion that “Tobinaga et al. does not teach the ‘means for enabling engine firing sequence’” is unsupported “by an explanation of how the claim is limited to specific features differing from the reference.” Examiner’s Answer pg. 6, ¶ 2. The Examiner then attempted to draw a correlation between that which is claimed and an element of the art of record. However, the Examiner’s attempted correlation is irrelevant at best and possibly even deceptive in light of the fact that the Examiner failed to cite the claimed element as a whole. That is, while the Examiner cited the “means for enabling an engine firing sequence,” the Examiner failed to continue his citation to cover the remaining words of the element. The cited step “C” not only calls for a “means for enabling an engine firing sequence,” but also states that the means is specifically tailored for enabling such “upon determining the absolute rotational position of the component during a single operation of the means for driving a rotational component of the engine.” Appellant finds this omission troubling because the Examiner removed portions of the claim and attempted to show similarities between the cited fraction of the element of the claim and teachings in the art of record. The Examiner cannot simply ignore elements of the claim, and it is clear that the Examiner has failed to provide any teaching or suggestion in the art of record, or even address the fact that the means for enabling a firing sequence is structurally limited to act “upon determining the absolute rotational position of the component during a single operation of the means for driving a rotational component of the

engine.” Therefore, as stated in the Appeal Brief filed August 20, 2003, claim 34 is clearly distinguishable over the cited reference.

The Examiner then addressed Appellant’s arguments regarding the fact that the pulse generating means of Tobinaga et al. is equivalent to “the ‘means for determining an absolute rotational position’ of claim 34” and stated that the arguments “serve only to establish that the elements are different, not that they are not equivalent.” Examiner’s Answer pg. 6, ¶ 3. However, upon proper review of the arguments on pages 15 and 16 of the Appeal Brief filed August 20, 2003, it is clear that the pulse generating means of Tobinaga et al. is not only different from the claimed ‘means for determining absolute rotational position’ but is clearly not equivalent. That is, the structure for Tobinaga et al., i.e. the pulse generating means, is precluded from operating as claimed. Specifically, claim 34 calls for engine firing to be dependent upon a determination of absolute rotational position, while Tobinaga et al. only teaches determining rotational position for synchronizing timing of the ignition signal with the rotation crankshaft. Col. 5, lns. 39-55. Tobinaga et al. simply does not teach or suggest that a determination of absolute rotational position is used as a precursor to engine firing. As such, claim 34 is clearly distinguishable from the reference.

The Examiner then contended that Appellant’s arguments establishing that there is no motivation to combine the features of Krueger with that of Tobinaga et al. are unpersuasive because “[a]n engine combining features of the alternator powered electronic control unit as taught by Krueger and ignition control as taught by Tobinaga et al. would provide the advantage of a less bulky engine for a small vehicle that avoids the hazards of reverse engine running.” Examiner’s Answer pg. 7, ¶ 3 (Emphasis Added). Appellant finds the Examiner’s statement particularly telling on two levels. That is, it completely ignores Appellant’s arguments that a combination of Krueger would result in either an electric start engine, which clearly would not render the present claims obvious, or, in the alternative, a manual start engine that prevents i.e. avoids, reverse running. In either case, the claimed invention would not be obvious because the claimed invention includes a manual start engine that allows reverse running.

The Examiner acknowledged this very distinction in stating that a combination of Krueger and Tobinaga et al. “would provide the advantage of less bulky engine for a small vehicle that avoids the hazards of reverse engine running.” Therefore, the Examiner specifically admitted that a combination would avoid reverse running rather than allowing reverse running, as claimed. Therefore, by the Examiner’s own admission, a combination of Krueger and Tobinaga et al. cannot render the claimed invention obvious.

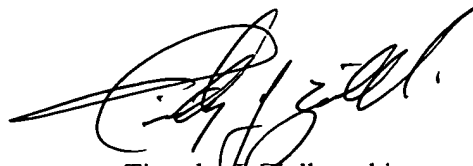
Nevertheless, the Examiner then concluded that “the argument that one of ordinary skill would not consider Tobinaga et al. when looking to improve starting efficiency is not germane to the issues of the rejection.” Examiner’s Answer pg. 8, ¶ 1. Again, Appellant finds the Examiner’s remarks particularly troubling. That is, since one of the advantages of the claimed invention is an improvement in starting efficiency of a manual start engine, Appellant is disturbed that the Examiner concluded that whether or not one of ordinary skill in the art would consider Tobinaga et al. when looking to improve starting efficiency is an issue that is not germane to the rejection. Contrary to the Examiner’s conclusion, Appellant believes such considerations are of paramount importance to the rejection. As argued in the Appeal Brief filed August 20, 2003, Appellant does not believe one of ordinary skill in the art would consider Tobinaga et al. in such a case because Tobinaga et al. is a reference specifically directed to electric start engines. Why, when looking to improve the starting efficiency of a manual start engine, would one of ordinary skill look to electric start engines? The Examiner carries the burden of answering such questions and has failed to do so. Therefore, the Examiner failed to establish a *prima facie* case of obviousness and the rejection cannot stand.

The Examiner concluded the Answer by stating that “Appellant’s speculation as to how one of ordinary skill in the art would combine the teachings of Krueger and Tobinaga et al. do not constitute evidence” and “[t]he arguments of counsel cannot take the place of evidence in the record.” Examiner’s Answer pg. 8, ¶ 2. However, while Appellant agrees that the arguments of counsel cannot take the place of evidence in the art of record, Appellant contends that the Examiner failed to supply any evidence of how one of ordinary skill in the art would combine the teachings of Krueger and Tobinaga et al. and, therefore, there is no evidence in the record of which Appellant’s arguments could take the place. That is, the Examiner has not provided any specific reference or citation to establish how one of ordinary skill in the art would combine the teachings of Krueger and Tobinaga et al. Therefore, since it is the Examiner’s burden to do so, and he has not carried that burden, the rejection cannot stand. Further, it is noted that where the Examiner fails to carry the burden, Appellant has no choice but to proffer argument highlighting the flaws of the rejection.

For all of the above reasons, Appellant has clearly rebutted the unsupported conclusions that the Examiner asserted as fact. Appellant has supplied reasoned statements and objective logical reasoning as to why one of ordinary skill in the art would not be motivated to combine Krueger and Tobinaga et al., while the Examiner failed to support his argument to the contrary with anything more than unsupported conclusionary statements.

For all these reasons and the reasons stated in the Appeal Brief filed August 20, 2003, Appellant believes the rejection is respectively traversed and, therefore, must be withdrawn. Therefore, Appellant believes claims 1-40 and 42-53 are in condition for allowance.

Respectfully submitted,



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5. **SUMMARY OF THE INVENTION AND OF THE DISCLOSED EMBODIMENTS**

"The present invention relates generally to two-stroke engines and, more particularly, relates to a method and apparatus for starting a rope-start, two-stroke engine 32." Application, pg. 1, lns. 1-2 (Enumeration Added).

According to the present invention, "the period required to start a rope-start, two-cycle engine 32 is reduced by enabling the engine's firing sequence immediately upon determining the absolute rotational position of the engine 110 and before determining the engine's direction of rotation 116." *Id.* pg. 5, lns. 1-5 (Enumeration Added). Once the rotational direction of the engine is determined 116, the firing sequence is disabled 120 if the engine is counter-rotating. *Id.* pg. 5, lns. 5-6. In this manner, the firing sequence is enabled much sooner in the engine's operational cycle than if the engine's rotational direction were determined before the firing sequence were enabled. *Id.* pg. 5, lns. 6-8. Absolute engine rotational position 110 and engine rotational direction 116 may be sensed by detecting and identifying 104, 108, 114, indexing markers 66 on a rotational component of the engine 58 and determining the sequence in which the indexing markers are detected. *Id.* pg. 5, lns. 9-12. The indexing markers may, for instance, comprise magnetic markers (i.e., teeth or other markers made of a magnetically conductive material such as steel) that are located on the engine's flywheel or crankshaft 66 and that are capable of being detected by a magnetic pick-up device 56, in which case the detector 56 preferably comprises a magnetic pick-up device located adjacent the rotating component 58. *Id.* pg. 5, lns. 12-16.

In accordance with one aspect of the invention, a two-stroke engine 32 is provided with improved quick start capability. *Id.* pg. 6, lns. 1-2. The engine 32 includes a manually-powered starter 40, a monitor 54, an electrically powered device 64 which controls at least one aspect of an engine's firing operation, and a computer 52. *Id.* pg. 6, lns. 2-4. The starter 46 typically comprises a pull-rope coupled to the engine's flywheel 58. *Id.* pg. 6, lns. 4-5. The monitor 54 comprises a pick-up device or other detector 56 that detects magnetic teeth or other markers on a rotational component of the engine such as a flywheel or a crankshaft 58. *Id.* pg. 6, lns. 5-7. The powered device may comprise the engine's fuel injection system and/or its ignition system or components of those systems 64. *Id.* pg. 6, lns. 7-8. The computer 52 is operable, in conjunction with the monitor 54, to determine an absolute rotational position of the monitored component (and hence the engine as a whole) and to

enable the supply of energizing current to the powered device 110. *Id.* pg. 6, lns. 9-11. Then, after enabling the supply of energizing current to the powered component 110, the computer determines the rotational direction of the monitored component 116 and disables the supply of energizing current to the powered device 120 if it determines that the monitored component is counter-rotating 118, 120. *Id.* pg. 6, lns. 11-15.

Preferably, the monitored component 54 bears first and second angularly-spaced indexing markers, A, B and the monitor 54 includes a detector 56 that is configured to detect passage of the first and second indexing markers A, B. *Id.* pg. 6, lns. 16-18. The computer 52 is configured to determine an angular spacing between the first and second indexing A, B markers and to identify the second detected indexing marker 110 and, hence, determine the absolute rotational position of the engine based upon this determination 110. *Id.* pg. 6, lns. 18-21. In order to permit the rotational direction of the engine to be determined, the monitored component 54 preferably bears a third indexing marker C that is angularly-spaced from both the first indexing marker and the second indexing marker A, B. *Id.* pg. 6, ln. 21 to pg. 7, ln. 1. The computer is configured to identify the third detected indexing marker and determine the sequence of passage of the second and third detected indexing markers based upon this identification 114. *Id.* pg. 7, lns. 1-3.

7. GROUPING OF CLAIMS

The Examiner has provided a single ground of rejection which Appellant contests. The pending rejected claims do not all stand or fall together.